Vertical Flight Society

2026-2027 Design-Build-Vertical Flight Competition

Request for Proposal

Version 2

Website: www.vtol.org/FLY

Questions: FLY@hq. vtol.org

Welcome Letter

Dear Students,

On behalf of the committee, it is my pleasure to welcome you to the 2026-2027 season of the Vertical Flight Society's Design-Build-Vertical-Flight Student Competition. Whether you are returning to the competition or building an aircraft for the first time, we are excited to have you with us.

Each competition season reminds us that engineering is rarely a straight path from an idea to a successful aircraft. The strongest teams learn to question assumptions, test deliberately, adapt when something does not work as expected, and continue improving their designs throughout the year. Some of the most valuable lessons will come not from the moments when everything works perfectly, but from the moments that force you to understand why it did not.

As you approach this year's challenge, I encourage you to think beyond simply completing the stated requirements. Understand the mission you are designing for. Every major design decision should have a purpose, and you should be able to clearly explain the reasoning, analysis, testing, and tradeoffs that led you there. An aircraft that flies successfully is an accomplishment. An aircraft thoughtfully engineered to perform its intended mission is something more.

That distinction should carry through every phase of your work: conceptual design, analysis, prototyping, manufacturing, testing, documentation, presentation, and ultimately flight. Your final aircraft will tell part of the story, but the engineering process behind it matters just as much. Be rigorous in how you evaluate your ideas, candid about what you learn, and willing to change course when the evidence points you in a better direction.

The competition will inevitably bring difficult days alongside rewarding ones. Components will fail. Tests may produce unexpected results. Schedules will change, and ideas that appeared promising on paper may need to be reconsidered. Do not be discouraged by those moments. Work through them together. Good engineering requires persistence, curiosity, humility, and the willingness to keep learning.

Just as importantly, enjoy the experience. You have an opportunity to build something ambitious alongside teammates who may become lifelong colleagues and friends. Share ideas generously, challenge one another constructively, celebrate progress, and take pride in how far your team develops over the course of the season.

We are deeply grateful to the faculty advisors, mentors, volunteers, sponsors, and supporters who make this competition possible and who invest their time in supporting the next generation of vertical flight engineers.

To every student competing this year: think boldly, engineer thoughtfully, test rigorously, and support one another. We look forward to seeing the creativity, determination, and ingenuity that you bring to this year's challenge.

Good luck, and we look forward to seeing your designs take flight!

Warm regards,

Adithya Ramaswami
Chair, VFS DBVF Student Competition

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Overview

Introduction

The Vertical Flight Society (VFS) is excited to announce the Design-Build-Vertical Flight (DBVF) 2026-2027 Student Competition. This competition challenges student teams to design, build, and fly a singular remote-controlled electric vertical takeoff and landing (eVTOL) aircraft, specifically tailored to address the demands of search and rescue. The Fly-Off event will be hosted at the Survice Engineering Applied Technology Operation (ATO) facility located at Harford Airport (3538 Aldino Rd., Hangar 6) in Churchville, MD.

Scenario: The Role of Drones in Search and Rescue

People go missing in backcountry terrain every year, and ground crews often cannot reach them before dark or before the weather turns. The first few hours usually decide whether a search ends in a rescue or a recovery. An eVTOL aircraft can leave from a trailhead, fly into a canyon, drop supplies onto the ground, and carry a person out without sending a crew in on foot. This year's competition asks students to design an eVTOL built for that kind of mission. Teams will need to show that their aircraft can handle tight terrain, place supplies accurately at sites with no landing zone, and carry survivors back to base safely.

Timeline for Deliverables & Awards

All items in the list below are due at their required respective deadlines. Unless otherwise specified (in the case of the FTR specifically), any late or non-compliant submissions will be subject to a 10-point deduction from the team's final score.

- **Letter of Intent to Compete (accepted on rolling basis)**: Oct. 30, 2026 at 11:59 pm ET
- **Safety & Risk Plan:** January 7, 2027 at 11:59 pm ET
- **Wiring Plan:** January 7, 2027 at 11:59 pm ET
- **Team Fly-Off Participant List**: January 21, 2027 at 11:59 pm ET
    - Must include pilot's proof of FAA Part 107 Drone Certification or equivalent certifying authority for non-US based teams.
- **Final Technical Report (FTR):** February 26, 2027 at 11:59 pm ET
- **Team Fly-Off Participant Confirmation or Withdrawal Deadline:** March 9th, 2027 at 11:59 pm ET
- **Video Submission Deadline:** March 23, 2027 at 11:59 pm ET
- **Competition Fly-Off Dates:** April 6-9, 2027
    - The event will last 4 days, starting April 6th morning and concluding by April 9th afternoon. Teams attending the Fly-Off are expected to stay for the full event.

The competition will provide awards for competitors. Please see the Awards section for more information.

The VFS DBVF Committee reserves the right to modify dates and timelines as necessary. Any changes will be communicated to all participating teams in advance.

Team & Pilot Requirements

Team eligibility rules are as follows:

- All team participants:
    - Must be full-time university students: Students may be at the undergraduate or graduate level, but they must be currently enrolled during the competition semester(s).
    - Each team must submit an entry fee of $350. Schools which are current VFS Educational Members are exempt from this fee.
    - At least one (1) Team Captain must be identified: this team member will be the POC for all VFS correspondence related to the competition.
    - At least one (1) faculty advisor must be named.
    - The student team captain(s), including faculty advisor(s), must be a current member of VFS (student membership is US$30/year) at the time of submitting the Letter of Intent. Every participant at the Fly-Off must be a current member of VFS prior to arrival. Find VFS membership information at vtol.org/membership.
- Teams can have any number of student participants on their team working on design, development etc.
- For the Fly-Off portion of the competition:
    - Teams are restricted to **no more than five (5) participants**, including students and faculty members.
    - The team members attending the competition Fly-Off should attend the entire duration of the Fly-Off.
    - These strict rules are set by available space at the competition host site to ensure safe support of the competition and teams. Note: VFS DBVF Committee and the competition host reserves the right to reduce or increase the maximum number of teams or team members allowed at the Fly-Off.
- Teams can also adjust their team rosters as appropriate throughout the year: please notify VFS of any changes to the main team roster.
- Before the Fly-Off portion, teams will submit a list of students and faculty advisors to VFS following these guidelines:
    - A number of team members equal to or less than the maximum allowable participants stated above, including faculty.
    - Attendance of at least one (1) Faculty Advisor at the Fly-Off is recommended but not mandatory.
    - Teams will fill out a team roster of individuals attending the Fly-Off portion of the competition and submit it to the VFS DBVF committee. Please see the Overview section above for exact dates and timeline. Foreign national (non-US Citizen) team members are permitted to attend the Fly-Off, but additional information may be required from the competition host.
- Only teams that have completed their Team Fly-Off Participant List, Safety, Risk, and Wiring Plans, Final Technical Report, and Flight Video will be allowed to compete in the Fly-Off.

- For teams based in the United States, the team's pilot must also hold an FAA Part 107 Drone Certification. For teams based outside of the United States, an equivalent licensure is required, such as the European A2 Drone Flying License. The name of the pilot(s) must be identified in the attendee list.
- If there is more than one team per school, VFS reserves the right to limit the number of teams based on review of the letters of intent. If two or more separate teams from the same university apply and must be down selected, the teams will be given the option to combine into a single team entry that meets all RFP requirements.
- Team Withdrawal: if a team needs to withdraw from the competition, VFS must be notified in writing as soon as possible. Please see the Overview section for exact deadlines. Withdrawing from the competition after this date or not attending the Fly-Off may result in penalties, including your university being barred from competing the following year.

Note that the aircraft is restricted to FAA's Part 107 requirements, notably a maximum takeoff weight (MTOW) less than 55 lb (24.94 kg) at takeoff. The vehicle along with any power supply and payload must be less than 55 lb (24.94 kg). However, the requirements of this RFP may be more restrictive than the requirements of Part 107. Please refer to the Aircraft Requirements portion of the "The Fly-Off Competition" section for more information.

Pilot Requirements

Team pilots must hold an FAA Part 107 Drone Certification or an equivalent UAS pilot certification for non-US-based teams in order to fly at the competition. Requirements include:

- Pilot(s) must be identified by the deadline listed in the Overview section, when the Fly-Off team list is due to the competition host**.**
- Pilots of non-US-based teams may hold an FAA Part 107 certification or hold an equivalent UAS pilot certification from another certifying organization.
- Teams can name more than one (1) pilot if all pilots hold FAA Part 107 Drone Certification or an equivalent UAS pilot certification for non-US based teams.
- The pilot(s) will be required to complete the relevant pre mission and ground mission checks at the competition before being permitted to compete in the rest of the Fly-Off.
- The pilot must be an attendee of the team during the Fly-Off and may be either a student or faculty advisor.

Letter of Intent (LOI) to Submit

The VFS Design-Build-Vertical Flight Competition proposal submission window will be open until the deadline listed in the Overview section; LOIs should be emailed to FLY@HQ.vtol.org, and will be accepted on a rolling basis until the stated deadline. Teams are encouraged to continue their progress while awaiting final approval of their LOI after submission.

The LOI submission is limited to 4-pages (including the cover page but excluding the Letter of Support) and must be written by the students. The LOI should include the following sections:

- Cover page including university and team name
- Team Introduction
- Organization
    - Team roster to include name, email address and class standing.
    - Teams can have any number of student participants working on the different phases of the competition.
    - At least one (1) team lead/captain, and no more than two (2) co-leads/co-captains, must be identified. The team captain(s) will be the main contact for all communications related to the competition.
    - Tentative project schedule.
- Overview of Technical Approach
    - Briefly summarize any initial conceptual designs the team is considering.
- Letters of Support: Please include one (1) letter of support from a Faculty Advisor - letters of support do not count against the 4-page limit.
    - Include any secured or planned team funding, either through the university or outside sponsors.
    - Please attach all Letters of Support at the end of the LOI, in one pdf document.

Letters of intent are reviewed for completeness only.

In the future, VFS DBVF may create opportunities for competing students to submit their resumes and contact information to be shared with companies and sponsors networked with DBVF. This is aimed to help connect students with additional opportunities (internships, jobs etc.) beyond the competition. This is simply a way for students and companies to network with each other, and there is no guarantee of external opportunities outside of DBVF. If any opportunities to share resumes/contact information are finalized, it will be communicated with teams accepted into DBVF for their consideration. In the meantime, please consider having resumes of team members on-hand.

Safety & Risk Plan

As part of the Vertical Flight Society (VFS) Design-Build-Vertical Flight (DBVF) Student Competition, each team must prioritize safety during the design, building, and testing phases of their aircraft. VFS assumes no liability for safety; it is the responsibility of each student team and their respective faculty advisors to establish and follow safety protocols during all design, build, and test activities conducted outside of the Fly-Off event.

Each team is required to submit a Safety & Risk Plan, developed in consultation with their faculty advisor. Please review the following bullet points:

- This document ensures that teams have proactively thought through safety protocols and risk management prior to testing and the competition.
- While this plan ensures a safer testing environment for teams outside of the event, it also allows teams to better prepare for the requirements provided by the host while occupying their airspace.
- During the Fly-Off event, all teams must adhere to the safety policies and requirements provided by the competition host while operating in their airspace.
- Recommended Length: No shorter than 2 pages. The Safety & Risk Plan must be submitted by the deadline listed in the Overview section.
- Non-Graded Requirement: The submission of the Safety & Risk Plan by the provided deadline is required for Fly-Off participation, but will not be graded, scored, or evaluated. Submissions occurring after the deadline may be subject to point deductions.
    - Late submissions will be subject to a 10 point deduction from the Team's final Fly-Off score.

The Safety & Risk Plan should include:

- Safety Procedures: guidelines for maintaining a safe environment during aircraft construction and testing.
- Risk Mitigation: strategies for identifying and addressing potential risks associated with design, build, and flight activities.
    - For example, how does your aircraft safely prevent crucial components, like batteries, from being punctured or damaged on impact? How will you safely disarm the aircraft on hard landing or crash? And how do those types of factors impact your design decisions and flight planning?
        - Reminder: consider how the placement and requirements for batteries and plugs may impact your design.

- Communication: methods for ongoing communication with the faculty advisor regarding safety practices and concerns, and active communication between team members during flight.
- Emergency Protocols: procedures for handling accidents or emergencies, including first aid measures and defined pre-flight, mid-flight, and post-flight emergency protocols.
- Signatures Required: the Safety & Risk Plan must be signed by the team captain(s), all certified Part 107 (or equivalent) holders, and the faculty advisor. This signature indicates that the safety measures and protocols have been reviewed and agreed upon internally to the team.

By submitting your Safety & Risk Plan, your team affirms its commitment to maintaining a safe environment during your participation in VFS's DBVF competition.

Wiring Plan

The purpose of the Wiring Plan is for each team to think about their electrical layout and system integration approach and ensure they meet competition requirements before the Fly-Off.

Each team is required to submit a Wiring Plan by the deadline listed in the Overview section. The Wiring Plan is a team's planned wiring schematic. This should be as detailed as possible, even if all final system components have not yet been finalized.

- Please note that during the pre-mission check at the Fly-Off, you must provide a final wiring diagram matching your exact final aircraft configuration. Please reference the pre-mission section for more details regarding this bullet point.

Recommended Length: No shorter than 2 pages dedicated to wiring diagrams and explanation.

The submission of the Wiring Plan is required for competition participation and will be reviewed by DBVF and the Host. Late submissions will be subject to a 10 point deduction from the Team's final Fly-Off score.

DBVF and the Host may reach out to teams individually to ensure competition requirements are met, which may require iteration and resubmission. If teams are not willing to comply with competition requirements, this may lead the team to be ineligible to compete during the Fly-Off.

The Wiring Plan should include:

- At the Fly-Off, teams will be expected to display all key functionality, such as any failsafes, the ability to unplug their battery without touching the airframe, respect any set geofences, and drop and pickup payloads safely. The Wiring Plan is required to have a discussion section covering these topics, rather than being included as part of the diagram directly.
- Wiring Diagrams: initial wiring diagrams for both system components and the full system architecture.
    - These diagrams are not being checked for technical accuracy but will be reviewed by DBVF and the Host to ensure that competition requirements are met.
    - This section should include a block diagram showing each major aircraft component (flight controller, GPS, compass, motors, sensors, telemetry, RC receiver, remote ID, control actuators, ESC's, batteries, voltage regulators, etc. as applicable to your configuration).

- The diagram must show:
  - Separation of high and low voltage components.
  - Location of the external plug for the propulsion battery or batteries.
- The specific component does not need to be defined, only the type of component (i.e. ESC vs T-Motor Air40A)
- An example diagram is shown in Figure 1 below.

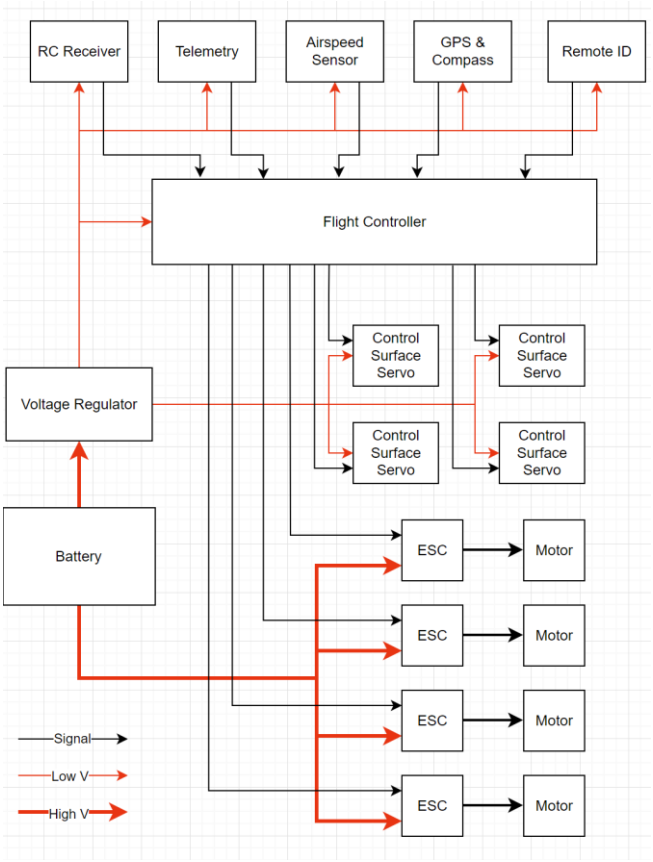


Figure 1. Example Wiring Diagram (Generalized Aircraft, and Missing Multiple Other Required Components)

By submitting your Wiring Plan, your team affirms its expectations for the workings of the aircraft and will ensure that specific competition requirements are acknowledged and met early on in the design process. The Wiring Plan will also be a living document, requiring iterative updates leading up to the Fly-Off. As significant changes occur, we encourage you to share these changes with DBVF prior to the final diagram used during the Fly-Off.

Video Submission

The intention of this video is to display flight-readiness for competing aircraft prior to the Fly-Off event. This video will be due by the deadline listed in the Overview section. Instructions on how to share this video with VFS will be provided to teams prior to this deadline. Late submissions will be subject to a 10 point deduction from the Team's final Fly-Off score.

Prior to the Fly-Off, teams must submit a video of their aircraft in-operation to certify their flight-readiness. This helps to ensure safe flight during the Fly-Off event. All videos must show the competing aircraft completing the "manual safety flight" requirements of Ground Mission 1. We also ask that teams perform the main technical components of the Flight Missions listed in the "The Fly-Off Competition" section of this RFP. The video does not have to show the full flight mission, just the specific action described. However, the full Ground Mission 1 must be shown.

FTR

The Final Technical Report (FTR) is limited to 14 pages, including the cover page. References are not included in the page limit. The report must be emailed to FLY@HQ.vtol.org by the deadline listed in the Overview section.

Late or non-compliant submissions will be subject to a 50 point deduction from the Team's FTR score, and teams that submit their FTR more than 7 days after the deadline will receive 0 points for their FTR. No exceptions. Teams are encouraged to submit ahead of the deadline to ensure successful delivery. Examples of non-compliance include, but are not limited to, exceeding a described page limit, not using the provided wording for section headers as shown below, not including a required section, or having incorrect formatting.

The FTR is intended to capture the team's reasoning, methods, and decision-making process, rather than serve as a checklist of completed tasks. Each required section below has a page limit. Teams should focus on providing clear, concise answers to the guiding questions.

Teams must use the section headers as listed below with exact wording provided, starting with the Executive Summary. For each question, the header must clearly state the question (for example: "Q1: What is your aircraft, and why did you design your aircraft this way?").

The scoring criteria for the FTR is detailed in the Scoring Section of this RFP. Teams are encouraged to review the rubric carefully, as it describes how judges will evaluate responses to each section. Below are the required sections in order:

Section	Page Limit
Cover Page	1
Executive Summary	1
Team & Schedule Overview	1
Q1: What is your aircraft, and why did you design your aircraft this way?	3
Drawing Package	1
Q2: How did you build, test, and validate your aircraft?	3
Q3: What is innovative about your aircraft, and why does this matter for the competition's scenario focus?	3
Reflection & Next Steps	1
References	Not Counted

Appendices are not permitted. All required content must be contained within the page limits specified. The Executive Summary, Reflection & Next Steps, and Questions 1, 2, and 3 must be written independently of each other, as the scoring of those sections will be dependent on the material contained within that section only. However, these sections may make references to Team & Schedule Overview and/or Drawing Package sections only.

Formatting: All FTRs must be Times New Roman, 12pt text size or larger, with one-inch margins.

The Fly-Off Competition

Expectations & Etiquette

A few notes for the Fly-Off event are included below:

- Radios will be provided for team communications across long distances. Teams are also welcome to use cell phones for communications.
- A power station will be available in the team working locations for laptops, ground stations, and other powered equipment. The charging of LiPo batteries will happen at a separate location specified during the event.
- Components, other than batteries, cannot be changed out on the aircraft between missions, but may be switched 1-for-1 to replace a failed component between flight attempts.
    - Any aircraft configuration changes will require the team to redo an abbreviated ground mission for approval, and will void all points from prior mission attempts. This does not reset total mission attempts permitted at the Fly-Off.
    - Swapping battery packs will be allowed between mission attempts, but only a 1-for-1 swap that matches the nominal voltage, chemistry, weight, and capacity of the swapped battery. State of charge (the remaining charge percentage of a battery) does not need to be 1-for-1.
- Please keep in mind that travelling with batteries may present challenges depending on your mode of transportation.
    - If your team requires component mailing, please check with DBVF to ensure that any necessary components, such as batteries, can be mailed in advance, and expect a lead time of at least 3 weeks in delivery. DBVF and the Host are not liable for any failures, loss, or damages incurred during component mailing, delivery, or storage.
- Flight crew must consist of at least 2 operators: a pilot and a GCS operator.
    - The pilot will be responsible for operating the RC controller.
    - The GCS operator will be operating the ground control station.
- The Host reserves the right to ground any aircraft due to safety concerns. If there are safety tests required by DBVF and the Host, they will be on a pass/fail basis.
- The Host and judges may also instruct the aircraft pilot to safely land, or even kill-switch, their aircraft mid-flight due to safety concerns for the nearby area or fellow participants.
    - Failure to comply with these instructions will result in full disqualification from the Fly-Off event, and the voiding of all points across all mission attempts.

- **Of note: The Fly-Off is a safety-first event.** Due to weather constraints, it is possible that not all intended missions will be completed by teams. In the event of inclement weather, all teams may universally be constrained to limited windows of flight opportunities, with additional windows occurring if time permits.

Below are a few brief notes on Fly-Off etiquette:

- At the Fly-Off kickoff, teams will be assigned a randomized order.
    - This order will be followed for all flight mission attempts and will repeat back from the beginning after reaching the end.
- Teams will be called by their order to go “on-deck”, at which point they should arrive at the flight line (which will be located at a short distance from the Home location). While on-deck:
    - Teams should prepare their aircraft to take off at the conclusion of the prior team’s mission attempt.
    - Failure to arrive promptly to the on-deck area will result in the team being passed in the order.
- When called to the flight area:
    - Teams are expected to take off within 4 minutes. Failure to take off within this period may result in the team being passed in the order.
- After completing a mission attempt:
    - Teams must then power down their aircraft and quickly make way for the next team to set up.
    - If payloads are dropped, team members are expected to help clear up all payloads dropped promptly after a judge gives the all clear to enter the field.
    - A crucial reminder: weather is never guaranteed. While DBVF will work to maximize the opportunities for teams to fly, inclement weather may present challenges during the competition.
        - Please be aware that each team is only guaranteed a set spot within the randomized order to be called on-deck, and they should be ready to fly on a moment’s notice should other teams pass on their opportunity to fly.
        - A kind note to teams: if inclement weather severely limits flight window availability, the importance of being ready to fly in the first cycle of flights cannot be overstated.
- This protocol may be subject to change by DBVF during the Fly-Off.

Aircraft Requirements & Constraints

Each team will only be permitted to compete with one singular aircraft during the Fly-Off event, which should match the single aircraft shown and discussed in the FTR. Below is a list of constraints and requirements that any aircraft competing in the Fly-Off must meet. If it does not meet these requirements, the aircraft may not be permitted to fly during the Fly-Off event.

- FTR & Video Consistency:
    - Teams must compete with the aircraft shown in the flight video, and documented in the FTR. The aircraft at the Fly-Off event must be substantially similar, with few modifications.
    - While teams with substantially different aircraft may still compete in the Fly-Off, this will result in a 40 point deduction from the team's final Fly-Off score.
- RemoteID:
    - To maintain compliance with FAA Part 107, all competing aircraft must be equipped with remoteID functionality. DBVF and the Host are not responsible for any non-compliant UAS operations.
- Maximum Aircraft Size:
    - A team's fully assembled aircraft, including fully extended propellers, and any singular loaded payload when compacted, may not exceed the dimensions of 8ft x 8ft x 8ft.
        - If foldable or compactable, any payloads and payload attachments must fit within the dimensions above when compacted. Such components may expand outside of those dimensions during flight.
    - **PLEASE NOTE: A bigger drone does not always mean a better drone. Your sizing and weight decisions may depend on a variety of factors beyond payload capacity.**
- Battery Power System:
    - The aircraft must be electric (electric power source and electric motors).
    - For the purpose of competition safety, unaltered commercially available LiPo batteries may be used. The team needs to select the proper capacity for their vehicle.
        - Batteries with chemistry that allow charging above 4.2V per cell may be used but will not be permitted to be charged above 4.2V per cell at any point during the Fly-Off event.

        - If connecting multiple batteries, ensure that the batteries are a) of the same chemistry, voltage and capacity; b) at the same charge level; and c) of the same age, charge cycle history, and health.
        - Crashes, damage, and poor multi-battery wiring may not immediately lead to a thermal event. However, if you try and charge damaged batteries, it can immediately lead to a thermal event. As such, batteries should be fully inspected before any flight to assess their readiness for continued use.
    - All LiPo batteries at the competition must be charged and stored inside a LiPo charging bag. They are only allowed outside the bag while being actively used with the aircraft.
    - The host will provide power and a location to charge batteries, but teams should bring their own charging equipment and charging bags to the event.
- Onboard Kill Switch (external propulsion battery plug):
    - The purpose of this plug is to provide an easy and quick way to manually disarm the aircraft.
    - A separatable plug connecting the batteries to the propulsion system must be reachable by hand from the exterior of the aircraft, without touching the aircraft. This must be connected to the propulsion system at minimum.
    - The plug must be located in a spot accessible from outside the aircraft.
    - A physical switch mounted on the drone would <u>not</u> be permitted and is <u>not</u> considered a valid plug.
- Remote Kill Switch:
    - During all flights, the aircraft must have the ability to remotely shut-off all propulsion components using a command from the pilot on the ground.
    - The command must not allow for a re-arming of the propulsion system after being issued.
        - For example, this command could fully power-off the entire propulsion system by disconnecting the battery. The command could also fully disarm the drone without disconnecting batteries.
- Remote Disconnection Functionality:
    - During all flights, if all ground-based control systems are disconnected from the aircraft for longer than 5 seconds, the aircraft must immediately begin landing vertically.
- A Ground Control Station (GCS) is required and must adhere to the following guidelines:

    - Must be displayed on a tablet, laptop, or separate monitor.
        - If FPV goggles are being used to aid teams, a separate operator must be present for that equipment.
    - Must be connected and displayed throughout the entire mission.
    - GCS must be able to:
        - View and change flight controller parameters.
        - Create and upload missions and geofences
        - Set failsafe actions
        - Receive live status messages on the state of the aircraft at least 1Hz
        - Send commands in real time to the aircraft
        - Show a map with the aircraft's live updating position on it
    - QGroundControl and Mission Planner are valid open-source GCS platforms
- Vertical Flight:
    - The aircraft must be capable of sustaining vertical flight during all required takeoff and landing phases. This means that no significant sideways motion can occur during these phases.
- Camera Systems:
    - Live camera and video transmission systems are permitted, alongside ground-based displays. There are no constraints on the direction of the camera.
        - Actuators and gimbals that actively orient camera sensors during flight are permitted.
    - During the competition, the aircraft pilot must maintain line of sight with the aircraft at all times and may not view any live transmission from this camera system. A separate operator is required to relay information.
- Equipment Placement and Real-Time Kinematic (RTK) Systems:
    - Teams will NOT be permitted to leave equipment or markers of any kind on or near the field, flight line, or course outside of their allotted flight windows for flight mission attempts. This includes any RTK base stations, or markers for later equipment placement.
    - Such equipment is allowed to be used during the flight missions unless otherwise prohibited in this RFP, but any markers or components that remain near the field, flight line, or course outside of the flight window for the attempt are not allowed.
- Line of Sight (LOS):
    - All flights must be performed within the line-of-sight of the RPIC (Remote Pilot In Command).
- Maximum Weight:

    - Including any payloads attached during this competition, the aircraft and all on-board attachments must weigh **below 25 lbs** at all times.
        - The Host reserves the right to land or kill command the aircraft if noticeably over-stressed and/or unstable upon takeoff.
- Transmission Frequencies:
    - Must follow US Federal Communications Commission (FCC) Part 15 rules for transmission frequencies and International Telecommunication Union (ITU) Region 2 frequency allocations. This means that telemetry, video, and control transmitters must operate on ~915 MHz, ~2.4 GHz or ~5.8 GHz.

- FAA Waivers:

    - No FAA waiver will be required at the competition. The UAS will be operated within the host's COA airspace. As such, the host will set any rules and restrictions for flight operation within their private airspace such that all teams operate in a safe fashion and in accordance with the rules given to the host by the FAA for their airspace. Teams and team pilots must adhere to the rules set forth during the safety and pre-flight briefs at the host's facility by the range officials. Non-compliance may result in immediate disqualification from the competition.

Pre-Flight Check

During the Fly-Off event, the pre-mission check will involve each team giving the judge an explanation of how the aircraft works, safety considerations, and operating procedures prior to a thorough inspection. This will provide an opportunity for judges to ensure the safety of the aircraft, make any required modifications before moving on, or disqualify an aircraft deemed unsafe or non-compliant.

If an aircraft does not meet all the safety and competition requirements, the team can apply modifications and ask for an additional pre-mission check. If a team does not meet the safety requirements after 3 pre-mission checks, the team will not be permitted to fly during the Fly-Off event. DBVF and the competition Host reserve the right to run the pilots through additional checks or tasks during the pre-mission check.

The judges will check for items such as:

- Sizing and weight constraints for the aircraft, payloads, and mechanisms.
- Any material constraints for payloads
- Battery specifications and general health.
- Aircraft kill switches and failsafes.
- The final wiring diagram for the aircraft should be displayed and presented during the check as well. This will be used as a reference point during system checks.

The Host may also check for safety and competition requirements in the form of aircraft parameters. If a team is using either Ardupilot or PX4 please refer to the list of parameters below for guidance on a starting point. These parameters may be required during the Fly-Off event for any aircraft utilizing this firmware.

Table 1. Suggested Starting Points for Common Parameters

Firmware	Parameter Name	Value
PX4 (v1.15)	NAV_DLL_ACT	3 - Land
	COM_DL_LOSS_T	5 seconds
	COM_RC_LOSS_T	5 seconds
	NAV_RCL_ACT	3 - Land
Ardupilot (4.5.7, Copter)	FS_OPTIONS	0 - Disabled
	FS_GCS_ENABLE	5 - Land
	FS_GCS_TIMEOUT	5 seconds
	RC_FS_TIMEOUT	5 seconds
	FS_THR_ENABLE	3 - Land

Missions

The Fly-Off will start with a Ground Mission (GM-1), then progress into the competition. The competition is composed of three Flight Missions: FM-1, FM-2, and FM-3.

For all flight missions, a standardized course will be used, as shown in Figure 2. This course includes a Home location for take-offs and landings, designated “H”. Multiple large zones (“D” for Drop, “S” for Start, and “L” for Land) and smaller waypoints (labeled "A”, “B”, and “C”) are also present, alongside a ground zone (labeled "GZ”) and the flight line area (labeled “Flight Line”). Dimensions are also provided, but drawings are not necessarily shown to scale. Please note: the dimensions showing the distances between waypoints A, B, and C are measured center-to-center, while H will be placed somewhere inside zone S.



Figure 2. Course Layout, with Waypoint and Ground Zone Locations. Course and Location(s) Not Necessarily Shown To Scale.

The course locations and sizes may vary during the Fly-Off. Additionally, the location of any waypoints and/or zones are subject to change prior to the Fly-Off. However, specific GPS coordinates and further information will be available and provided to teams during the event. Teams will also be provided designated times for GPS calibration and measurement.

General Mission Notes

The next subsections contain more information on each mission that will occur during the Fly-Off. All teams are required to complete the Pre Mission and Ground Mission 1 before performing any Flight Missions.

For all missions, the aircraft will be required to fly in a specific flight pattern. Below are a few clarifications on this process:

- Horizontal Transit:
    - All horizontal transit must be done at an altitude greater than or equal to 30ft AGL, measured from the aircraft itself.
- Vertical Takeoff/Landing:
    - If the aircraft has significant sideways motion during the landing/takeoff process, the judges and flaggers reserve the right to verbally say “Restart”, at which point the aircraft will either return to the required altitude to vertical land again, or land to vertical takeoff again. In either case, any ongoing timers will continue during this process.
    - Successful vertical take-offs and landings are up to the discretion of the judge located at the Home waypoint.
    - Aircraft motion due to significant wind/gusts will not disqualify a vertical landing or vertical takeoff.
    - For vertical descent:
        - The aircraft may begin any descent after coming to a stop above the waypoint that it will descend upon.
        - When descending, the aircraft may re-center itself on the location, within reason. If there is any significantly large horizontal movement during the descent, the aircraft will be required to ascend back up to 30ft and reattempt the descent, unless another altitude is stated.
        - If there is significant wind, reasonable horizontal motion is acceptable to stay centered.

Ground Mission 1 (GM-1): Essential Flight and Verbal Communication

Consistent, reliable, and safe flight is key in many sUAS operations. The goal of this mission is to display that the competing aircraft can perform consistently and safely.

The pilot must meet the following safety requirements under the maximum expected load for the team across all flight mission attempts:

- Manual Safety Flight Requirements:
    - Perform a controlled vertical take off
    - Steadily hover in place for at least 5 seconds
    - Steadily yaw (turn) the aircraft left and right
    - Steadily translate the aircraft forward, backward, left, and right
    - Perform a controlled vertical landing
    - If the aircraft is a VTOL Plane, the aircraft must display forward flight and then transition into and out of forward flight.
- If the team is planning to perform in any autonomous flight operations, they must show the ability to manually override an autonomous mission and land. Requirements below:
    - Teams will be asked to plan a mission with an autonomous takeoff and land at one location only.
    - Then interrupt the takeoff with manual control, hover steadily in place for 15 seconds, and then land.

Of note: during all armed portions of aircraft operation, all participating team members must remain behind a Host-defined boundary. **Approaching the aircraft while armed will result in immediate disqualification of the attempt.** The pilot of the aircraft must also loudly verbally signal major flight events prior to performing them, including any:

- Takeoffs and landings
- Intentional motions/movements in the air (ie/ yaw left, yaw right, forward, backward, left, and right)
- Arming and disarming events
- Flight mode changes

The Competition

Your scenario:

> *A storm has flooded the only road into a mountain valley, and a group of hikers has been missing for multiple hours. The terrain is too steep for ground crews to reach them before dark, so a search and rescue aircraft is launched.*
>
> ***FM-1:*** *The crew has to fly through a narrow canyon in gusting crosswinds and pick a path around rocks and tall trees to reach the search area. Once there, they need to hold the aircraft steady in the wind while they sweep the valley floor for any trace of the missing group.*

FM-2: *The hikers turn up on a ledge under heavy tree cover with one of them hurt. There is nowhere close by to land, so the aircraft hovers above the site and drops survival kits through the canopy onto the ledge. Any kit that misses and falls into the ravine is lost, and there are only a few kits available.*

FM-3*: Once the injured hiker is stable, the rest of the group climbs to a small clearing on the ridge above, the only place nearby where the aircraft can set down. From there the aircraft carries them back to base one at a time, and each flight has to be smooth so that nobody gets hurt. The trips continue until everyone is out.*

Mission: *Can your team deliver supplies and bring everyone home safely?*

The payloads (representing both supplies and people) will be singular containers filled with at least 3lbs of water (not including the container and any attachments). Teams will be provided with water, measured to at least 3lbs, to fill their containers prior to their flight attempt. During any flight mission, an aircraft may never carry more than one payload at a time. Teams are also encouraged to consider how their own container design for their payloads will remain in-tact after a drop, and to ensure that payloads can be filled from a standard jug by-hand before flight. Payloads, including any attachments to their containers and the containers themselves, must not exceed the dimensions 4ft x 4ft x 4ft.

While payloads are permitted to contain or carry electronic components, they may not utilize any electronic components that allow them to reposition or move themselves. Teams are encouraged to consider how the use of electronic components, such as batteries, may impact the safety of their payloads. Additionally, payloads may not contain sharp pointed surfaces for the purpose of puncturing the ground.

Each team will have a maximum time of 10 minutes per attempt. Prior to the mission:

- All zones (S, L, and D) will be marked with spray paint on the ground. All waypoints (A, B, C, and H) will be marked as circles with varying diameters via spray paint, with diameters A=7ft, B=5ft, C=3ft, and H=15ft.
- Prior to takeoff, the team may place up to 3 payloads in total in zone S, so long as they are not inside of H. Additional materials may also be left inside of S, but may not be touched by the team during the flight missions.
    - When dropped, payloads and their respective attachments must never shatter. Shattering includes:
        - If any individual payloads or their respective mounting mechanisms break apart into more than one piece, this will count as a shatter. Additionally, if a container begins to visibly

leak liquid during a flight mission, this will also count as a shatter.
    - Teams may not leave materials anywhere else on the course, outside of S. No markers may be left on the course outside of a team's flight window either.
- A judge will be stationed at GZ. Optionally, one team member (not the pilot or any other operator of the aircraft or its components) may also be stationed at GZ.
    - This team member may communicate with the pilot verbally, visually, or over radio/cellular device.
    - This team member may not leave their respective zone during the flight missions, except for when the timer is paused after FM-2. They must await approval from the judge to enter the field, and must walk behind them respectfully without interrupting the judge while they judge the course.
    - While the timer is paused during FM-2, this team member may follow the judge onto the field, where they may retrieve any drops that the judge first deems "failed". They may NOT touch any payloads if the judge does not deem them "failed".
- The aircraft will be safely assembled and turned on in H by the team, with no payload onboard.
- All remaining team members, including the pilot, will remain at the flight line. **If at any point a team member leaves their designated zone while the aircraft is armed, the attempt will be disqualified.**
- The pilot must be located out of line of sight of telemetry and visual data displays and must maintain line of sight with the aircraft at all times. The Host will designate a specific location for the pilot to stay during the flight, near the operators of the displays. The pilot will have line of sight to the home location and may not look at the displays.
- The aircraft must be set in either a manually piloted or autonomous flight mode prior to takeoff.

All altitudes will be measured above ground level, not relative to takeoff unless otherwise specified. The competition is composed of three consecutive flight missions, which must happen in series in one single "attempt" without the team touching the aircraft or swapping components on the aircraft. Each attempt must begin with FM-1. Before the next flight mission is started, the prior must be completed. Rules for each mission are as follows:

- **Flight Mission 1 (FM-1), vertical takeoff and land REQUIRED:**
    - Main Technical Component:

        - Manual or Autonomous Takeoff and Landing
    - A timer will begin on first take-off. The aircraft must take-off vertically to 30 feet, and then horizontally transit over zone D, and then land vertically within zone D.
        - The aircraft is not required to disarm once landed, but significant sideways motion during landing will result in a failed landing.
        - A landing also means no ‘bouncing’, or violently rapid touch-downs. Whether or not the aircraft ‘bounces’ will be determined by the judges present.
        - The entirety of the aircraft, including propellers and attachments, must be fully inside of zone D.
    - The judge will raise their flag or hand to signal a successful landing at this zone.
    - Then, the aircraft must take off vertically to 30 ft, horizontally transit over H, and land vertically inside of H, with the entire aircraft fully inside H.
    - The team may proceed to Flight Mission 2 after judges have affirmed successful landings.
        - If the aircraft fails to receive a flag from a judge, or if it does not receive approval from the judge at the flight line, it must return to at least 10 feet and try to land vertically again.
    - If the team fails to land within the required bounds, there may be a point deduction as outlined in the scoring section.
- **Flight Mission 2 (FM-2), vertical takeoff and land OPTIONAL:**
    - Main Technical Component
        - Picking Up and Dropping Payload (Manual or Autonomous)
    - The aircraft may then take-off to at least 30ft AGL.
    - From here, the aircraft may horizontally transit at least 30ft AGL over a payload and pick it up, without any manual loading of payloads by the team. The aircraft may descend while doing so (descent is not required).
    - The aircraft should then return to 30ft AGL, horizontally transit to one of waypoints A, B, or C, and drop the payload from at least 30ft AGL.
        - Mechanisms attached to the aircraft that allow for lowering or partial lowering prior to the drop of the payload while the aircraft remains at 30ft AGL are permitted.
    - The aircraft and team may repeat this process for up to 3 payloads in total.
    - At the team’s discretion, the aircraft may return to land at H and disarm to complete FM-2, at which point the timer will be paused.

- The judge located at GZ will inspect the locations of the dropped payloads, and communicate to the team whether they may proceed to FM-3. The aircraft will remain disarmed during this process.
- In order to proceed to FM-3, at least one waypoint (A, B, or C) must have a payload contained inside of it on judge inspection. If no waypoints (A, B, or C) contain a payload, the team concludes their run and cannot proceed to FM-3.
    - "Contain" means that the payload is making contact with the ground either inside of the drawn circle or on the line of the drawn circle. The final position of the payload is what is used for this, NOT the initial touchdown point.
        - For example, if a payload comes to rest while making contact with the ground outside of the drawn circle, but a portion of it hangs above the circle while NOT making contact with the inside of the circle or its line, this would NOT be considered "contained".
    - Any payloads that are "failed" (are not contained in a waypoint) will be removed from the course.

- **Flight Mission 3 (FM-3), vertical takeoff and land OPTIONAL:**
    - Main Technical Component:
        - Retrieving dropped payloads (Manual or Autonomous)
    - FM-3 will begin with the aircraft re-arming and taking off to at least 30ft from H. The timer will resume when the aircraft loses contact with the ground.
        - The team must take off within 1 minute of receiving approval for takeoff from the airboss. Otherwise, FM-3 is forfeited by the team, and the attempt will conclude.
    - From here, the aircraft must horizontally transit at least 30ft AGL, and may attempt to retrieve all payloads dropped during FM-2, one at a time.
        - This includes any "successful" payloads that made it into the waypoints in FM-2. This does NOT include any payloads left inside zone S at the end of FM-2, or "failed" payloads removed from the course after FM-2.
    - The aircraft must make contact with the ground when retrieving a payload, so descent will be required.
        - It must be the aircraft (not the payload) that makes contact with the ground.

    - The aircraft must return to at least 30ft AGL, horizontally transit to zone L, and descend to land. The payload must not be dropped at any point while the aircraft is not in contact with the ground.
    - While the aircraft is in contact with the ground, the payload may be released into zone L.
        - For the payload to be inside of zone L, the same ruling as FM-2 will be used based on final placement, inside or on the line.
    - Teams may retrieve a portion of the required payloads at their discretion. This will impact scoring, as outlined in the scoring section.

- The aircraft must conclude the attempt for any combination of flight missions by landing at Home (vertical landing optional) before the allotted time runs out or receive point deductions as outlined in the scoring section.
    - If the timer ends while the aircraft is in the air, the team is expected to return the aircraft to land at H immediately.

Scoring

FTR

The scoring system is designed to reward teams that not only meet the baseline requirements but also demonstrate clear reasoning, strong evidence, and thoughtful communication. The Final Technical Report (FTR) is an opportunity to showcase your aircraft, your process, and your team's work throughout the competition season.

The FTR serves as the detailed record of your work. It is where teams demonstrate the depth of their technical reasoning, documentation, and evidence.

The requirements establish the minimum expectations for content, while the rankings below share insights into the guiding tone for judging and how judges will differentiate between weaker and stronger responses. Below is the ranking that will be the guiding tone for judging:

- Minimal (0-25% of available points): Meets few requirements, lacks clarity or evidence.
- Adequate (25-50% of available points): Covers the basics but with limited reasoning, evidence, or depth.
- Strong (50-75% of available points): Addresses most requirements with solid reasoning and evidence.
- Exceptional (75-100% of available points): Fully meets and exceeds requirements, with compelling reasoning, strong evidence, and clear communication.

Teams may go beyond the stated requirements to include additional reasoning, evidence, or insights that strengthen their responses.

FTR Scoring

Table 2: FTR Scoring Criteria		
Section	**Points**	**Requirements**
Cover Page	**2**	Include team name, school(s), picture of aircraft design, submission date, logo (optional), and report title
Executive Summary	**30**	Summarize questions 1, 2, and 3 here, providing a concise overview
Team & Schedule Overview	**10**	Provide a summary of team organization, faculty advisor, roles, and schedule progress up to submission

Q1: What is your aircraft, and why did you design your aircraft this way?	**90**	Explain the aircraft configuration and major design decisions, supported by reasoning and evidence. Include a requirements matrix, highlighting competition requirements prioritized by the team, derived requirements and prioritization of those derived requirements for the aircraft, and sound logical reasoning for both prioritizations. Also include a trade study for major designs and configurations, based on the derived requirements.
Drawing Package	**10**	Provide clear drawings that define the aircraft layout, dimensions, and key features
Q2: How did you build, test, and validate your aircraft?	**90**	Briefly restate your derived requirements from Q1 in this section. Describe your fabrication methods, ground testing, flight testing, and any other validation of design choices. Explain the reasoning behind how you validated your aircraft, how the validation relates to your derived requirements, and what your results indicated.
Q3: What is innovative about your aircraft, and why does this matter for the competition's scenario focus?	**90**	Explain your innovations, how they differ from conventional approaches, and why they add value in the context of the mission scenario. Perform an analysis of the stakeholders for the mission scenario, including both end-users and potential organizations. What needs do they have for this scenario, and why do your innovations drive an impact for each of them?
Reflection & Next Steps	**18**	Summarize what has been learned, challenges encountered, and what remains to be done before the Fly-Off
Presentation & Organization	**10**	Quality of writing, clarity of structure, professional formatting, and general formatting/spelling
Total	**350**	

Mission Scoring

Points during the Fly-Off event will be allocated by the equation and variable explanations below, with a maximum of 400 points available. The competition attempt with the highest number of final points will be used in the final scoring.

$$\boldsymbol{Final\ Points = G + A + R(B_P + C_P) + B_A + C_A + T}$$

GM-1

- G:
  - +20 points for completing GM-1.

FM-1

- A:
  - +55 points for completing FM-1 manually, or +65 points for completing it fully autonomously.

FM-2

- B_P:
  - +5 points for every payload inside of waypoint A on judge inspection at the end of FM-2;
  - +10 points for every payload inside of waypoint B on judge inspection at the end of FM-2; and
  - +30 points for every payload inside of waypoint C on judge inspection at the end of FM-2.
- B_A:
  - +15 points for completing FM-2 fully autonomously, with at least one payload inside at least one of waypoints A, B, or C on judge inspection and autonomy is not disrupted from the start of FM-2.

FM-3

- C_P:
  - +30 points for every payload inside of zone L at the end of FM-3.
- C_A:
  - +15 points for completing FM-3 fully autonomously, with at least one payload inside zone L on conclusion and autonomy is not disrupted from the start of FM-3.
- T:
  - These are points associated with the time remaining on conclusion of FM-3, only available when a mission attempt reaches FM-3, at least one payload has been placed in zone L, and the aircraft has landed at H

before the end of the timer. Points are assigned in the following brackets, shown in Table 3 below.

Table 3: Points for Time Remaining in FM-3	
Time Remaining	**Points**
>0s	T=0
30s +	T=1
1m +	T=3
1m 30s +	T=5
2m +	T=7
2m 30s +	T=9
3m +	T=11
3m 30s +	T=13
4m +	T=15

Other Variables:

- R:
  - In this year's competition, teams are encouraged to consider weight optimization for their aircraft. This variable is the payload fraction multiplier.
  - Weight will include everything EXCEPT the water. This includes the airframe, battery, dropping mechanism, and the heaviest-weight empty water container used by the team.
  - The multiplier is assigned in the following brackets, shown in Table 4 below.

Table 4: Payload Fraction Multiplier	
Unloaded Aircraft Weight	**Multiplier**
< 10lbs	R=1.5
11.99lbs - 10lbs	R=1.4
13.99lbs - 12lbs	R=1.3
15.99lbs - 14lbs	R=1.2
17.99lbs - 16lbs	R=1.1
19.99lbs - 18lbs	R=1.05
>= 20lbs	R=1

Point Deductions:

Point deductions will only apply to attempts at the flight missions, independent of GM-1. An attempt will never score below zero points. Below is a list of point deductions that can occur during the flight missions.

- Adjustments to remaining points at end of attempt:
    - -25 points:
        - Every time the aircraft makes contact with the ground at any location other than somewhere inside zones D, S, and L (the waypoints and H count as inside).
        - Every time the aircraft lands due to a failsafe, including but not limited to communications disconnection and geofence breaching.
        - If the aircraft does not conclude the attempt by landing at Home before the timer has ended.
- The attempt automatically concludes:
    - Every time the aircraft lands due to a failsafe, including but not limited to communications disconnection and geofence breaching.
        - Please note, teams may attempt to exit failsafes during the landing process, but the attempt will conclude if the aircraft touches down during the failsafe.
        - Teams will keep the points acquired during the attempt up to the failsafe landing, but will still receive the point deduction outlined above.
- Full attempt disqualification (total of 0 points for the competition attempt, but not the ground mission):
    - Aircraft experiences a rapid unscheduled disassembly on the field.
    - GCS is removed from the GCS operators' view at any time during the flight.
    - Any individual team member leaves their designated zone before the conclusion of all flight missions, except while one team member follows the judge during the judge inspection.
    - The aircraft attempts to continue completing the mission (ie/ does not return to land at H) after the timer for an attempt concludes.
- Payload drop point adjustments (Teams may still proceed with FM-2 and FM-3 if such events occur, based on the process described in the Fly-Off section)
    - B_P and C_P are both set to zero:
        - If at least one shatter occurs anywhere on the field at any time during an attempt, across all 3 flight missions.
    - C_P is set to zero:
        - If during FM-3, a payload is dropped while the aircraft is not in contact with the ground. (In the context of the scenario, this would be dropping the person you are rescuing from the sky)
        - If any payloads in FM-3 make contact with the ground outside of zones D and L.
    - B_P is set to zero:

- If during FM-2, any payload is released at an aircraft altitude of less than 30ft anywhere on the course after leaving the ground. This includes any unintentional payload drops that happen after a payload leaves the ground.
- If any payloads in FM-2 make contact with the ground outside of zones D and S.

Final Overall Scoring

Final scores will be calculated by adding together all points from each mission, along with the FTR. The rankings, including 1st, 2nd, 3rd, 4th, and 5th place awards, will be calculated from the total cumulative score across all categories. Final scores from all teams for each section of scoring, including the final scores for the FTR, Ground Missions, and Flight Missions respectively, may be made public at the conclusion of the competition.

Awards

Competition awards will include the following. In the event of multiple teams having a tied overall score, rankings between those tied teams will be decided by the fastest competition attempt from the Fly-Off that was used in scoring.

- Overall competition winners will be awarded with the following monetary amounts:
  - **1st Place Overall: $2000**
  - **2nd Place Overall: $1400**
  - **3rd Place Overall: $800**
  - **4th Place Overall: $500**
  - **5th Place Overall: $300**

Final Notes

Expenses and Support

VFS will not provide any travel or accommodation support for competing teams or pay or reimburse any other expenses. Teams are encouraged to search for university or company sponsors for travel, accommodation, equipment, etc., and are free to display any sponsors logos on their team shirts and on their aircraft.

Statement on Autonomy

Assistive autonomy is permitted in missions requiring manual flight modes. An example of assistive autonomy would be a system that keeps altitude at 20 ft during cruise or a system that holds the aircraft in place when the pilot releases control input.

In all autonomous flight modes, the pilot must not have their hands on the controls, but must be capable of rapidly taking control and transitioning to a manual mode in case of emergency or as requested by judges or the competition host. ***Unless otherwise stated, if the pilot places their hands on their controls during a portion of a mission requiring autonomy, points associated with autonomy for that portion of the mission will be removed.***

If an autonomous flight mode requires a manual input to takeoff at any point during the competition, this will not impact any points awarded for autonomy. While the aircraft is in the air, however, it must remain in an autonomous flight mode in order to receive points associated with autonomy.

Questions

Questions should be sent to fly@HQ.vtol.org. The Frequently Asked Questions (FAQ) document will be posted to the competition site on a roughly monthly basis.

- Updated FAQ document will be periodically posted to the DBVF website https://vtol.org/FLY

Disclaimers

Safety is paramount in this competition. The rules are designed to minimize risk to all participants and to comply with U.S. government restrictions at the test site. VFS and the DBVF Committee assume no responsibility and accept no liability for any actions, injuries, or damages caused by participants of the DBVF Competition.

DBVF RFP rules are subject to change. Any updates will be published at the end of a revised document and it will be posted to www.vtol.org/FLY. All registered competitors will be notified of any clarifications on the rules or necessary adjustments.

Participation in the competition explicitly gives permission to VFS to use text, graphics, photographs, and video documentation of the competition and all competitors for educational and promotional purposes only. The competition event, participating schools, and team names may be the subject of VFS *Vertiflite* magazine articles, web page postings, social media, or other forms of publicity.

Final Word

The VFS DBVF Committee wishes you all the success possible in undertaking this year's VFS Design-Build-Vertical Flight Competition, and we look forward to meeting you at the Fly-Off competition. Good luck, and safe flying!

Revision History

Document Version	Update Notes	Release Date
1	First Release	9/21/2026
2	Please see changes in yellow, including: • Clarification on payloads that contain electronic components and sharp/pointed surfaces. (page 25) • FM-3 landing requirement update. (page 28) • Updates to submission deadlines. (page 4) • Battery requirements clarification. (page 17) • Update to FM-2 and FM-3 requirements for payload drops. (pages 27, 34-35)	11/09/2026